

# South Dakota AFNR

## *Academic Integration Activities: Example #8*

→ *Fundamental Ag Mechanics students use cause and effect clues to understand the operation of a four stroke internal combustion engine.*

### **1. Ag Standard**

*Fundamental Ag Mechanics—FAM 2.3*

Repair internal combustion engines.

- > Write a description of the operation of internal combustion engines.

### **2. Academic Standard**

*11.R.1.1*

Students can apply cause and effect clues to extend vocabulary.

### **3. Background Information**

The cause of an action or event may be stated using an unfamiliar word. If the effect is stated in familiar terms, it can help the reader understand the unknown word.

Example: The weeds in the garden are so profuse that I can no longer see the flowers.

What does the word “profuse” mean?

- > Cause: There are many weeds.
- > Effect: You can’t see the flowers.
- > Profuse must mean a large amount of something.

Words signaling cause and effect:

- > Because
- > Since
- > Therefore
- > Consequently
- > As a result
- > So
- > That

### **4. Example in Context**

The intake valve is open during the *intake stroke*. As a result, the air/fuel mixture enters into the cylinder and combustion chamber.

- > Signal word: As a result

- > Cause: Intake valve is open
- > Effect: Air/fuel mixture can enter the cylinder
- > Intake stroke must mean a period before power is created or a time when new fuel comes into the cylinder

## 5. Guided Practice Exercises

A spark leads to *combustion*; consequently, the explosion pushes the piston and the crankshaft.

- > Signal word: Consequently
- > Cause: A spark
- > Effect: An explosion that creates power
- > Combustion must mean lighting the fuel/air mixture to create an explosion

## 6. Independent Practice Exercises

As the piston pushes the fuel/air mixture into a smaller space, it creates *compression* because pressure on the fuel/air mixture is greater than before.

- > Signal word: Because
- > Cause: Piston pushing the air/fuel mixture into a smaller space
- > Effect: Increased pressure
- > Compression must be an action that increases the pressure on something

## 7. Notes

Have students look for examples of cause and effect signal words in text books and technical manuals.